PROGRESS IN PHARMACY.

A Modern Laboratory and the Old-Time Apothecary Shop.

Brobdingnagian Machines Used by the Manufacturing Pharmacists—Extent of Their Business and Its Effect on the Pharmaceutical Profession.

Special Chicago Letter.

Within the last few years the practice has been growing among physicians to carry their drug stores with them. The Homeopath has always done this, and with the growth of facilities for condensing strong medicinal properties in small pills and tablets the Allopath is gradually following in the footsteps of his brother of the other school.

This, of course, lightens the burden of the consumer—the sick who must pay the bills—and it is a progressive step. But like all such steps in progress, it is lamentable in many respects.

HOW THEY DID TWENTY-FIVE YEARS AGO.

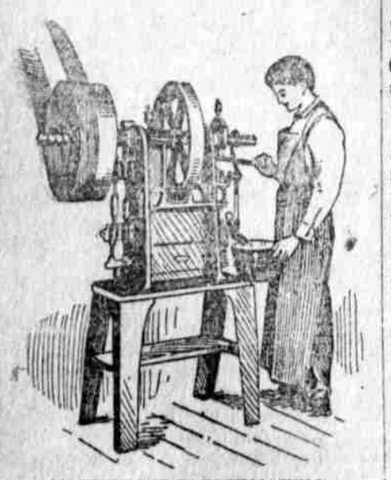
The venerated apothecary of old is gradually dying out. There is no longer any room for him, and he becomes a mere druggist, a merchant in medicines. True, a knowledge of chemistry is still necessary, and the pharmacist must possess a general scientific education equal, and even superior in some respects, to that of the practicing physician, but his usefulness as a chemist, analytical and manufacturing, is growing less from year to year.

We cannot wonder at the fate of the apothecary when we consider the extent and volume of the business transacted by the manufacturing chemists, or, more strictly speaking, manufacturing pharmacists, who are displacing him. Detroit, St. Louis and Chicago boast of several large houses which supply the entire west with products. Hundreds of thousands of tablets are turned out daily by a single firm in Chicago. The same firm, a few days ago, bought ten tons of couch grass in one shipment, all of which will be used in the manufacture of a single article.

These firms buy their crude drugs, their vegetable materia medica in tremendous quantities from New York brokers and sometimes directly from the producer. The salts, however, the menstruums, and all the more intricate preparations are bought from three firms who are in reality the only manufacturing chemists, although the manufacturing pharmacist ordinarily goes by the same name.

When the manufacturing pharmacist has procured his crude drug, he must dry it thoroughly. Sometimes it is air-dried, that is, all water except such as is held in solution by the air within the drug, but the more common procedure is to subject the drug to heat not exceeding 212 degrees Fahrenheit. In this way every particle of water is driven off, while the volatile substances are retained.

Then the drug is ground. There are many different kinds of grinders to suit varied conditions. The apothecary of former times was obliged to grind all his drugs with a hand machine similar to the ordinary spice or coffee mill. A large iron mortar was also used for pounding and smashing hard drugs. Occasionally, when large quantities were to be ground, the drug was taken to some Croesus who possessed a chaser mill. This machine consisted of a concave revolving disk which contained the crude drug and a number or porcelain balls which rolled about and ground the drug into a powder. As the powder began to form, the [illegible] of the circular motion tended to raise it over the walls of the disk and in this way it was collected in a vessel under the machine. The principle of grinding with porcelain balls is still in use, but the machine is in the shape of a large hollow ball. Into this are put the crude drug and the porcelain balls; the vessel is closed air-tight and revolves until the powder has reached the required fineness. Then the vessel is turned around with its mouth directly over a small box, a covering is thrown over the top, and the stopper is removed. The valuable contents drop into the box below, and little or none of it escapes into the air.



MACHINE FOR TABLET MAKING.

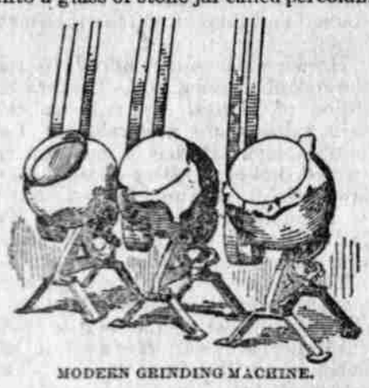
But there are many drugs where grinding by rapidity of motion is not desirable, such as gum resin and all drugs containing volatile oils which would be injured by heating. For such drugs a machine similar to a wringer with iron cylinders is used in our large laboratories. One of the rollers revolves five times as fast as the other, and in this way the drug is not merely crushed, but torn to pieces. The machine is small and revolves slowly, but the unequal rapidity of motion of the two cylinders gives it the power to grind easily the hardest drugs, such as colchicum seed, which is so hard that it cannot be mashed with a heavy sledge-hammer. Similar machines are now used in our large flour mills, and they possess the inestimable advantage of extracting all the nutritive elements of the seed, instead of peeling away the husk and with it much of the most valuable portion of the seeds, such as the phosphates.

There are two other kinds of mills in common use. One consists of two iron plates which rub against each other and are used for bulky drugs, while the other is needed especially for grinding "impalpably fine," that is so fine that the powder feels like a perfectly smooth mass. This is inclosed in an iron casing and contains a vertical wheel with protruding teeth or beaters which throw the drug against an iron netting called the screen. The wheel turns at the rate of 3,000 revolutions per minute.

All of these grinding machines are now in common use among manufacturing pharmacists and each possesses advantages for certain purposes, but the poor apothecary of twenty-five years ago was obliged to grind all his drugs as best he could in his primitive hand mill or at best in a chaser machine.

Solid extracts are obtained in two ways. The old-fashioned way, and one which is still in use, is to subject the herbs to strong pressure until all of the juices had been squeezed out. This liquid is then boiled down to about the consistency of honey. About fifty years ago the making of fluid extracts began. Four of them were entered into the pharmacopoeia of 1850. The original idea was that one minim of the fluid should represent one grain of the drug. In this way the apothecary could know exactly what quantity of the extract he would have to take to obtain a certain quantity of active medicinal properties. This difficulty had always been a stumbling block for the apothecary, and, strange to say, it was not until after a great deal of experimenting that the present simple system of percolation was devised.

Nowadays, the ground drug is put into a glass or stone jar called percolan.



MODERN GRINDING MACHINE.

It has an opening at the bottom covered with a metal screen and filter paper. Upon the drug is poured pure alcohol, which in passing through extracts all the active properties and comes out as a finished fluid extract. The solid extract may then be obtained by simple evaporation. While the process is a simple one, many details must be observed, especially as to the density of the liquid.

After all the medicinal properties have been extracted, the mass left in the percolator contains an increased amount of alcohol. This residue is placed in huge tanks and the alcohol is redistilled —"recovered" by heating. This recovered alcohol is not however always used for medicinal purposes, as some manufacturers believe that it is impossible to separate it completely from certain volatile substances contained in the drugs. It is claimed by experts that the recovered alcohol always retains a peculiar odor which is as easy to detect as the smell of camphor.

The making of tablets has developed into a complicated industry. Tablets are all the fashion nowadays. Twenty-five years ago a dough was made and tablet after tablet was pressed out by hand and rolled through a sirup to give it a sugar coating. Machines are now in use which make from 300 to 400 tablets per minute. The dry powder flows from a small rubber feed to a steel plate which contains a hole the size of the tablet. As the powder fills the hole a punch from above shoots down and presses it with terrific force. Another punch below the plate then throws the pressed mass up and an attachment to the feed pushes the tablet to the side at the same moment that it refills the hole.

The tablet is now finished except the sugar coating. For this purpose a hollow vessel of Brobdingnagian dimensions is provided. A sirup is put in with the tablets and the vessel starts to revolve, sometimes under a gentle application of heat. As the water evaporates the sugar will precipitate and coat the tablets with wonderful accuracy and evenness.

The pillmaking industry is on the wane. Tablets are more popular and machine facilities for pillmaking are fewer. The pill is made from a dough which is rolled out to any thinness desired, up to one one-hundredth of an inch, with almost mathematical accuracy by placing it between two boards which approach by means of an accurate screw. The dough is then pressed into little round balls by concave cylindrical surfaces which are pressed in at right angles. The coating process is similar to the one employed with tablets.

E. T.

HARD LINES.

Medical Men Suffering from Too Much Philanthropy.

The medical men of Brussels, according to the London News, are passing through a trial of much the same sort as that which lately afflicted their professional brethren in Cork. They complain of the inadequate pay they receive from the societies formed by the working people to secure medical attendance on the cooperative principle.

In Brussels, as in many places elsewhere, the poor club together for medical aid, and engage a practitioner, who attends them for a fee which is almost purely nominal. This might be endured, and is endured, on the consideration that the insufficient offerings of the poor man will be made good by the liberality of those who are better off in the world. But that is just where Brussels fails. The well-to-do middle class has contrived to secure a footing in the "mutualist" societies.

Persons who are quite able to make good the deficit in the medical exchequer help to increase it. They come in as poor men in such numbers that the unhappy practitioner hardly knows where to look for his legitimate fee. He has protested, but his last state is worse than his first. The protest was addressed to the offenders only, and they had no difficulty in persuading the vast majority of the genuine working class members to make common cause with them.

The doctors are the best abused persons in Brussels just now, and twenty of them have resigned their office in the mutualist societies. As prelude to a possible strike of doctors, this seems to signalize one of the most awful dangers of the time. It would be awkward, however, if—by a pure coincidence, of course—the death rate should diminish during the continuation of the strike.

MUSKMELON LITERATURE.

The Fruit Has Formed the Theme of Lovers and Writers.

Muskmelons have played a part in history. They caused the fall of Arques and led Mack to the capitulation of Ulm. One day, says the Paris Le Temps, Abbe Bernis came to dine with the marquise de Pompadour, who was furious because the maitre d'hotel had forgotten to serve melon. "Shall I get two muskmelons for you, madame?" He paid two louis for them. "Delightful," said the marquise. "My compliments, Monsieur l'Abbe." Bernis was happy until the moment when the clock struck his eye. "What makes you sad?" asked the pompadour. "Oh, madame la marquise," he replied, "my friend Malvin and I have only one pair of trousers for both of us, and he is waiting for it to go to dinner." The pompadour gave a pension of three hundred thousand livres and an abbey to him. His friend became, under the same protection, archbishop of Lyons. One evening a strategist was explaining to Bonaparte what he should have done if Mantua had not surrendered. Bonaparte asked: "You have been in the wars, monsieur?" The strategist replied: "No, but I have read Polybius, Marshal Saxe and Chevalier Folard." Bonaparte said: "Oh, you are learned! Do you know how to make melons grow?" The strategist exclaimed: "General!" indignantly. Bonaparte continued: "You have read La Quintinie?" "Yes, general," the strategist answered. "You do not know how to make melons grow, although you have read La Quintinie, and yet you talk to me about war because you have read Polybius. Good day, sir," Bonaparte said.

SOME STAGE GAGS.

Little Things That Made a Variety Comedian's Auditors Laugh.

As the favorite comedian appeared before the audience of a local variety theater with the limp so characteristic of him, there was a ripple of applause. The only way that he could properly introduce himself was by singing a song, and he at once bravely complied with the time-honored custom, says the Philadelphia Call.

"I wore a new pair of shoes the other day," he announced, after the piano player had stopped. "They didn't hurt me until I met two policemen. Then I got pinched."

"Something else I must tell you," he continued. "I was sleeping in a cellar the other night when I woke up and saw five mice playing poker. They were deep in the game—raising and calling and raking in the chips. They didn't notice a cat behind a barrel near by, but I did.

"Suddenly the puss made a leap. The game ended with the same old story—everything went into the kitty."

Spectacles in the Collection.

A novel method of correcting a clergyman's mistakes in reading is reported in the Church Review. During the collection after a sermon one Sunday, a gentleman in the congregation quietly took off his spectacles and put them on the plate. The church warden courteously handed them back, supposing them to have been put there in absence of mind, but the donor again deposited them on the plate, and, not wishing to make a scene, the official finished his duties, and the spectacles were duly presented with the other alms. However, after the service he took them down to the donor—a stranger—and said he feared they were given by mistake. Judge of his surprise on being assured that it was no mistake—that the clergyman who read the prayers had made so many blunders in reading that he presumed he could not see, and so he presented him with a pair of spectacles.

A Cure for Slander.

In Poland it was once the custom to sentence all backbiters to go on all fours and bark like a dog for the space of a quarter of an hour. This mode of punishment was introduced during the reign of Charles V., but it was soon abolished, as it had to be applied so frequently that his majesty's rest was disturbed, for the barking went on all the forenoon while the courts were sitting.

A SERIOUS AFFAIR.

The Old-Time Breakfast of Which Newly Married Ones Partook.

The old-fashioned wedding breakfast was a training in fortitude for others beside the bridegroom, says a London journal. It was the nurse of manly virtues for some half-dozen or more of his friends. Little do the unthinking youths who nowadays assemble at a wedding to "guy" the "best man" suspect that a generation ago a victim of this description would not have had to "dree his weird" alone. His weird would have been dreed conjointly with him by a "second best," a "third best," down sometimes in a descending scale of excellence to an "eighth best" man. To every bridesmaid there was a "groomsman," and to the youngest groomsman there was a speech, the response to the toast of the bridesmaid's health. It was an effort of oratory demanding extraordinary tact—a demand which, we need not say, was very rarely satisfied—in the youth who would steer successfully between the Scylla of sheepishness and the Charybdis of vulgar jocularity; and many were the groomsmen whom one or other of these twin whirlpools swept away. But the survivors—nay, even the submerged—arose the stronger for their plunge.

They had familiarized themselves in imagination with the position of a bridegroom, often even assisting their imaginative powers by a flirtation with their allotted bridesmaids; and they sometimes returned home nerved for future feats of matrimonial daring of which their degenerate descendants seem incapable.